OIPE

RAW SEQUENCE LISTING   · DATE: 04/16/2002
PATENT APPLICATION: US/09/896,186B   TIME: 11:54:48

Input Set : A:\31814A Sequence Listing.txt
Output.Set: N:\CRF3\04162002\I896186B.raw

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 3 <110> APPLICANT: Joshua Z. Levin
 4        Ken Phillips
 5        Greg Budziszewski
 6        Fred Meins
 7        Zhenya Glazov
 9 <120> TITLE OF INVENTION: Methods of Controlling Gene Expression
11 <130> FILE REFERENCE: PB/5-31481A
W--> 12 <140> CURRENT APPLICATION NUMBER: 09/896,186B          ENTERED
C--> 13 <141> CURRENT FILING DATE: 2002-04-04
15 <160> NUMBER OF SEQ ID NOS: 38
17 <170> SOFTWARE: PatentIn Ver. 2.1
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20 <211> LENGTH: 942
21 <212> TYPE: DNA
22 <213> ORGANISM: Arabidopsis thaliana
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27 accgtacaag ctacaacctc cgtccatggc cacgaggagg atccaaatca aatccccaat 180
28 aatatccgtc gccaattgcc tcgttccatc acttcttcta catcttataa acgatttcct 240
29 ctctcccgtt gccgagctag gaatttttcca gcaatgaggt ttggtggtag gattttgtat 300
30 agcaagactg ctactgaggt tgataagcga gcaatgcagc ttattaaagt tcttgatacc 360
31 aagagagatg aatctggaat agctttttgtt ggcttggata ttgagtggag accaagtttt 420
32 agaaaaggtg ttctcccggg gaaggttgcg actgtccaga tatgtgtaga tagtaattat 480
33 tgtgatgtta tgcatatttt tcattctggt atccctcaaa gtctccaaca tcttattgaa 540
34 gattcaacac ttgtaaaggt aggtattgga attgatggtg actctgtgaa gcttttccat 600
35 gactatggag ttagtatcaa agatgttgag gatctttcag atttagccaa ccaaaaaatt 660
36 ggtggagata aaaatggggg ccttgcctca ctaactgaga cacttgtttg caaagagctc 720
37 ctgaagccaa acagaatcag gcttgggaac tgggagtttt atcctctgtc aaagcagcag 780
38 ttacaatacg cagcaacgga tgcttatgct tcatggcatc tttacaaggt aacaacaacg 840
39 aaaaaccatc ttctcacact caacgacctt gaagcaaaaa tctcacatcg ttctaattat 900
40 aatactgtta cttgtcgaaa acctggaggt tatcttcggt ga          942
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44 <211> LENGTH: 313
45 <212> TYPE: PRT
46 <213> ORGANISM: Arabidopsis thaliana
48 <400> SEQUENCE: 2
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52 Leu Ala Ile Asp Ala Ile Glu Ala Ser Tyr Asn Phe Ser Arg Ser Ser
53           20                  25                  30
55 Ser Ser Ser Ser Ser Ala Ala Pro Thr Val Gln Ala Thr Thr Ser Val
56           35                  40                  45
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59      50              55              60
61 Gln Leu Pro Arg Ser Ile Thr Ser Ser Thr Ser Tyr Lys Arg Phe Pro
62 65              70              75              80
64 Leu Ser Arg Cys Arg Ala Arg Asn Phe Pro Ala Met Arg Phe Gly Gly
65              85              90              95
67 Arg Ile Leu Tyr Ser Lys Thr Ala Thr Glu Val Asp Lys Arg Ala Met
68          100             105             110
70 Gln Leu Ile Lys Val Leu Asp Thr Lys Arg Asp Glu Ser Gly Ile Ala
71      115             120             125
73 Phe Val Gly Leu Asp Ile Glu Trp Arg Pro Ser Phe Arg Lys Gly Val
74      130             135.            140
76 Leu Pro Gly Lys Val Ala Thr Val Gln Ile Cys Val Asp Ser Asn Tyr
77 145             150             155             160
79 Cys Asp Val Met His Ile Phe His Ser Gly Ile Pro Gln Ser Leu Gln
80              165             170             175
82 His Leu Ile Glu Asp Ser Thr Leu Val Lys Val Gly Ile Gly Ile Asp
83          180             185             190
85 Gly Asp Ser Val Lys Leu Phe His Asp Tyr Gly Val Ser Ile Lys Asp
86          195             200             205
88 Val Glu Asp Leu Ser Asp Leu Ala Asn Gln Lys Ile Gly Gly Asp Lys
89      210             215             220
91 Lys Trp Gly Leu Ala Ser Leu Thr Glu Thr Leu Val Cys Lys Glu Leu
92 225             230             235             240
94 Leu Lys Pro Asn Arg Ile Arg Leu Gly Asn Trp Glu Phe Tyr Pro Leu
95              245             250             255
97 Ser Lys Gln Gln Leu Gln Tyr Ala Ala Thr Asp Ala Tyr Ala Ser Trp
98          260             265             270
100 His Leu Tyr Lys Val Thr Thr Thr Lys Asn His Leu Leu Thr Leu Asn
101         275             280             285
103 Asp Leu Glu Ala Lys Ile Ser His Arg Ser Asn Tyr Asn Thr Val Thr
104     290             295             300
106 Cys Arg Lys Pro Gly Gly Tyr Leu Arg
107 305             310
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111 <211> LENGTH: 1929
112 <212> TYPE: DNA
113 <213> ORGANISM: Arabidopsis thaliana
115 <400> SEQUENCE: 3
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117 aagaaggtaa tcgatgtgaa agtggctgag agtgataagg gattcgcgaa atttggcaag 120
118 gcagaggttc cgtttcatat accgacgtta acgaagcctc aagaggagta taagattttg 180
119 gtagacaatg ctaataatcc ttttgagcat gttttgttgg agaagagtga agacggtctt 240
120 cggttcattc atccactgga ggaactatct gtgatggact ttgttgatag aaatctaagt 300
121 gagatgagac ctgttaagcc tctcccattg gaagagactc cattcaagct agttgaagaa 360
122 gtcaaagatc ttgaggactt agctgctgca ttgcaaagtg ttgaagagtt tgctgtcgat 420
123 ctggagcata atcagtatag aactttttcaa ggattaacat gcttgatgca aatctctact 480
124 agaaccgagg attatattgt tgatatattc aagctttggg atcacattgg tccttatcta 540
125 aggggaactct tcaaagaccc taaaaagaaa aaggtaatcc atggagcaga tcgagatatt 600
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Input Set : A:\31814A Sequence Listing.txt
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126 atttggcttc aacgggactt tggcatttat gtctgcaatc tttttgacac aggacaggct 660
127 tcaagggtgc taaagctgga gagaaatagt ctggaatttc ttctgaagca ttattgtgga 720
128 gttgctgcaa acaaagaata ccaaaaagca gactggagaa taagacccct tccagatgta 780
129 atgaaaagat atgctagaga agatacacat tatcttttgt acatttatga tgtaatgcga 840
130 atggagttgc acacaatggc aaaggaagat gagcaatctg actctcctct ggtagaggtg 900
131 tacaagcgca gttatgacgt gtgcatgcaa ctatatgaaa aagagctttg gactagggat 960
132 tcatatcttc acgtttatgg ggttcagaca ggtaatctca atgcggttca actttccatt 1020
133 gttgcgctgc aggggctttg tgaatggcgg gatcggattg cacgcgcaga tgatgagagc 1080
134 accggttatg tattgccaaa taaaactctt tttgacatag ccaaggagat gccaattgtt 1140
135 gttgcccagt tgcgccgttt gttgaagtca aagcttcctt acctcgagcg taattttgac 1200
136 gcagtgatca gtgtcatcag acgatcaatg caaaatgcag cggcattcga gccagttgtt 1260
137 caatctttga aagataggcg tcctgaaaca gtggttgaaa tgaatataga acctaagatt 1320
138 gagaaaacag acacaggagc ttcagcgtct tctctgagtc tggagaaggt ttgtgtggat 1380
139 gattcaaaga aacaaagcag tggttttgga gttttgccgt aaagaggaa gttggaaagt 1440
140 gacaaaacgg tggttgaaaa gaatatcgaa cctaagattg agaaaacagg cacagaagct 1500
141 tcagcttctt ctctgagttc gaagaaggtt tgtgtggatg attcaaagaa acaaagcagt 1560
142 ggttttggag ttttgctgtc aaagaggaag tttgaaagtg ataacaagaa gttgcaggta 1620
143 aaagaagagg tcaaagtgtc caagtccaag ccagataagg taatcatagt ggtggatgat 1680
144 gatgatgatg atgatgatga tgagtcttat gaacagagca cgaaagccgc tgatgctttg 1740
145 gacagagttt cggaaacgcc ttcgaaggga tcaccatcgt tgactcaaaa gccgaagaca 1800
146 tgtaatacag aggttattgt gttagacgat gatgatgact cggaaagcag agaagatgaa 1860
147 gacatgcgta ggagaagtga gaaacatagg agattcatga atatgaaacg tggctttctt 1920
148 aacatttag                                                    1929
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152 <211> LENGTH: 642
153 <212> TYPE: PRT
154 <213> ORGANISM: Arabidopsis thaliana
156 <400> SEQUENCE: 4
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161              20                  25                  30
163 Lys Gly Phe Ala Lys Phe Gly Lys Ala Glu Val Pro Phe His Ile Pro
164          35                  40                  45
166 Thr Leu Thr Lys Pro Gln Glu Glu Tyr Lys Ile Leu Val Asp Asn Ala
167      50                  55                  60
169 Asn Asn Pro Phe Glu His Val Leu Leu Glu Lys Ser Glu Asp Gly Leu
170  65                  70                  75                  80
172 Arg Phe Ile His Pro Leu Glu Glu Leu Ser Val Met Asp Phe Val Asp
173              85                  90                  95
175 Arg Asn Leu Ser Glu Met Arg Pro Val Lys Pro Leu Pro Leu Glu Glu
176          100                 105                 110
178 Thr Pro Phe Lys Leu Val Glu Glu Val Lys Asp Leu Glu Asp Leu Ala
179          115                 120                 125
181 Ala Ala Leu Gln Ser Val Glu Glu Phe Ala Val Asp Leu Glu His Asn
182      130                 135                 140
184 Gln Tyr Arg Thr Phe Gln Gly Leu Thr Cys Leu Met Gln Ile Ser Thr
185 145                 150                 155                 160
187 Arg Thr Glu Asp Tyr Ile Val Asp Ile Phe Lys Leu Trp Asp His Ile
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Input Set : A:\31814A Sequence Listing.txt
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190 Gly Pro Tyr Leu Arg Glu Leu Phe Lys Asp Pro Lys Lys Lys Val
191                180                185                190
193 Ile His Gly Ala Asp Arg Asp Ile Ile Trp Leu Gln Arg Asp Phe Gly
194                195            .    200                205
196 Ile Tyr Val Cys Asn Leu Phe Asp Thr Gly Gln Ala Ser Arg Val Leu
197     210                215                220
199 Lys Leu Glu Arg Asn Ser Leu Glu Phe Leu Leu Lys His Tyr Cys Gly
200 225                230                235           .        240
202 Val Ala Ala Asn Lys Glu Tyr Gln Lys Ala Asp Trp Arg Ile Arg Pro
203                245                250                255
205 Leu Pro Asp Val Met Lys Arg Tyr Ala Arg Glu Asp Thr His Tyr Leu
206                260                265                270
208 Leu Tyr Ile Tyr Asp Val Met Arg Met Glu Leu His Thr Met Ala Lys
209            275                280                285
211 Glu Asp Glu Gln Ser Asp Ser Pro Leu Val Glu Val Tyr Lys Arg Ser
212     290                295                300
214 Tyr Asp Val Cys Met Gln Leu Tyr Glu Lys Glu Leu Trp Thr Arg Asp
215 305                310                315                320
217 Ser Tyr Leu His Val Tyr Gly Val Gln Thr Gly Asn Leu Asn Ala Val
218                325                330                335
220 Gln Leu Ser Ile Val Ala Leu Gln Gly Leu Cys Glu Trp Arg Asp Arg
221            340                345                350
223 Ile Ala Arg Ala Asp Asp Glu Ser Thr Gly Tyr Val Leu Pro Asn Lys
224            355                360                365
226 Thr Leu Phe Asp Ile Ala Lys Glu Met Pro Ile Val Val Ala Gln Leu
227     370                375                380
229 Arg Arg Leu Leu Lys Ser Lys Leu Pro Tyr Leu Glu Arg Asn Phe Asp
230 385                .   390                395                400
232 Ala Val Ile Ser Val Ile Arg Arg Ser Met Gln Asn Ala Ala Ala Phe
233                405                410                415
235 Glu Pro Val Val Gln Ser Leu Lys Asp Arg Arg Pro Glu Thr Val Val
236                420                425                430
238 Glu Met Asn Ile Glu Pro Lys Ile Glu Lys Thr Asp Thr Gly Ala Ser
239            435                440                445
241 Ala Ser Ser Leu Ser Leu Glu Lys Val Cys Val Asp Asp Ser Lys Lys
242     450                455                460
244 Gln Ser Ser Gly Phe Gly Val Leu Pro Leu Lys Arg Lys Leu Glu Ser
245 465                470                475                480
247 Asp Lys Thr Val Val Glu Lys Asn Ile Glu Pro Lys Ile Glu Lys Thr
248                485                490                495
250 Gly Thr Glu Ala Ser Ala Ser Ser Leu Ser Ser Lys Lys Val Cys Val
251     500                505                510
253 Asp Asp Ser Lys Lys Gln Ser Ser Gly Phe Gly Val Leu Leu Ser Lys
254            515                520                525
256 Arg Lys Phe Glu Ser Asp Asn Lys Lys Leu Gln Val Lys Glu Glu Val
257     530                535                540
259 Lys Val Ser Lys Ser Lys Pro Asp Lys Val Ile Ile Val Val Asp Asp
260 545                550                555                560
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Input Set : A:\31814A Sequence Listing.txt
Output Set: N:\CRF3\04162002\I896186B.raw

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262 Asp Asp Asp Asp Asp Asp Asp Glu Ser Tyr Glu Gln Ser Thr Lys Ala
263             565             570             575
265 Ala Asp Ala Leu Asp Arg Val Ser Glu Thr Pro Ser Lys Gly Ser Pro
266             580             585             590
268 Ser Leu Thr Gln Lys Pro Lys Thr Cys Asn Thr Glu Val Ile Val Leu
269         595             600             605
271 Asp Asp Asp Asp Asp Ser Glu Ser Arg Glu Asp Glu Asp Met Arg Arg
272     610             615             620
274 Arg Ser Glu Lys His Arg Arg Phe Met Asn Met Lys Arg Gly Phe Leu
275 625             630             635             640
277 Asn Ile
281 <210> SEQ ID NO: 5
282 <211> LENGTH: 714
283 <212> TYPE: DNA
284 <213> ORGANISM: Arabidopsis thaliana
286 <400> SEQUENCE: 5
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289 ggattttga gaggagagtg ttcattggaa atgagtgatt catatgtgtg ggttgagaca 180
290 gagtcgcagt taaaggaact tgcagaaata ttagcaaaag aacaagtttt tgcggttgac 240
291 actgagcagc atagtttgcg gtcgtttctt ggtttcactg ctctaattca gatttctaca 300
292 catgaggaag acttttggt ggacacaatt gcgttacatg atgtaatgag tattcttcgt 360
293 cctgttttct ctgatcctaa tatttgtaag gtgtttcacg gggctgacaa cgatgttatc 420
294 tggcttcaaa gagacttcca tatatatgtt gttaatatgt ttgatactgc caaggcatgt 480
295 gaagtgttgt caaagcctca acgatcactg gcatacttac ttgagacagt atgtggagtg 540
296 gctactaaca aattgctgca gcgtgaagat tggagacagc gtcctctgtc cgaagagatg 600
297 gtgcgatatg ctagaacaga tgcacactat ctgctttata ttgcagatag tttgacaact 660
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302 <211> LENGTH: 237
303 <212> TYPE: PRT
304 <213> ORGANISM: Arabidopsis thaliana
306 <400> SEQUENCE: 6
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311             20              25              30
313 Leu Glu Asn Pro Gln Ile Glu Phe Gly Phe Leu Arg Gly Glu Cys Ser
314         35              40              45
316 Leu Glu Met Ser Asp Ser Tyr Val Trp Val Glu Thr Glu Ser Gln Leu
317     50              55              60
319 Lys Glu Leu Ala Glu Ile Leu Ala Lys Glu Gln Val Phe Ala Val Asp
320 65              70              75              80
322 Thr Glu Gln His Ser Leu Arg Ser Phe Leu Gly Phe Thr Ala Leu Ile
323             85              90              95
325 Gln Ile Ser Thr His Glu Glu Asp Phe Leu Val Asp Thr Ile Ala Leu
326             100             105             110
328 His Asp Val Met Ser Ile Leu Arg Pro Val Phe Ser Asp Pro Asn Ile
329         115             120             125
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RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 04/16/2002
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Input Set : A:\31814A Sequence Listing.txt
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Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:28; N Pos. 5,10,13